dition, the presence of hemagglutinin may be useful in distinguishing this bacterial species from others of the genus *Shigella*.

The specificity of the action of *S. alkalescens* on human, monkey, and hog red blood cells appears to indicate that some substances common to these three species are present in their red cells, while absent in cells of other animal species. This specificity is in rather marked contrast to the findings of Guyot, and also to the recent report of Keogh.

Summary. 1. Saline suspensions of *S. alkalescens, B. bronchiseptica, H. pertussis, V. comma, S. pyogenes* are capable of clumping human red blood cells.

2. Suspensions of *S. alkalescens* agglutinate human, monkey, and hog red blood cells, and do not agglutinate cells of certain other animal species.

3. The hemagglutinin of *S. alkalescens* can be separated from the bacterial cell by high speed centrifugation after successive freezing and thawing of bacterial suspensions.

4. The hemagglutinin of *S. alkalescens* is labile, being destroyed by heat, and spontaneously disappears from cultures on standing at 5°C for 6 weeks.

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Effect of Thyroxin on Mouse Susceptibility to Polioencephalitis.*

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The fact that a small fraction of persons in a population group display recognizable symptoms of poliomyelitis even in epidemic situations has led to the suggestion that there may be physiological factors involved in determining the susceptibility to the disease.

The higher morbidity rate among children and pregnant women and the possibility of predisposing factors such as physical exertion and preceding infections suggest that this hypothetical physiological factor may be of an unspecific character. An increased metabolic rate is common to all these conditions mentioned. However, it may be noted that the observation of general decreases in BMR during the warmer season of the year when most poliomyelitis epidemics occur is not in agreement with the assumption of an increased metabolic rate as a factor increasing the susceptibility to poliomyelitis.

Recent experimental studies[1] on the influence of environmental temperature on the resistance of Swiss white mice to the poliomyelitis virus showed a marked tolerance of these animals to the infection when acclimated to low temperatures. Since thyroxin secretion is increased upon exposure to cold the influence of thyroid treatment on the susceptibility to poliomyelitis was investigated. On a small number of Swiss white mice it could be shown[2] that thyroactive substances were able to prolong the incubation period of poliomyelitis up to 100% whereas thiouracil had the opposite effect.

The effect of the thyroid hormone on the resistance to neurotropic virus disease is of great theoretical and practical importance and therefore further studies on this subject seemed indicated. Our investigations were concerned with the effect of crystalline thyroxin on the susceptibility of mice to the MM strain of mouse polioencephalitis. Thyroxin was chosen instead of other thyroactive extracts or substances because the effect of crystalline thyroxin on the metabolism lends itself in a more accurate way to a standardization of experimental conditions.

The 3-5-weeks-old mice used for these

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1 Holtman, D. Frank, *Science*, 1946, **103**, 137.

2 Holtman, D. Frank, *Science*, 1946, **104**, 50.

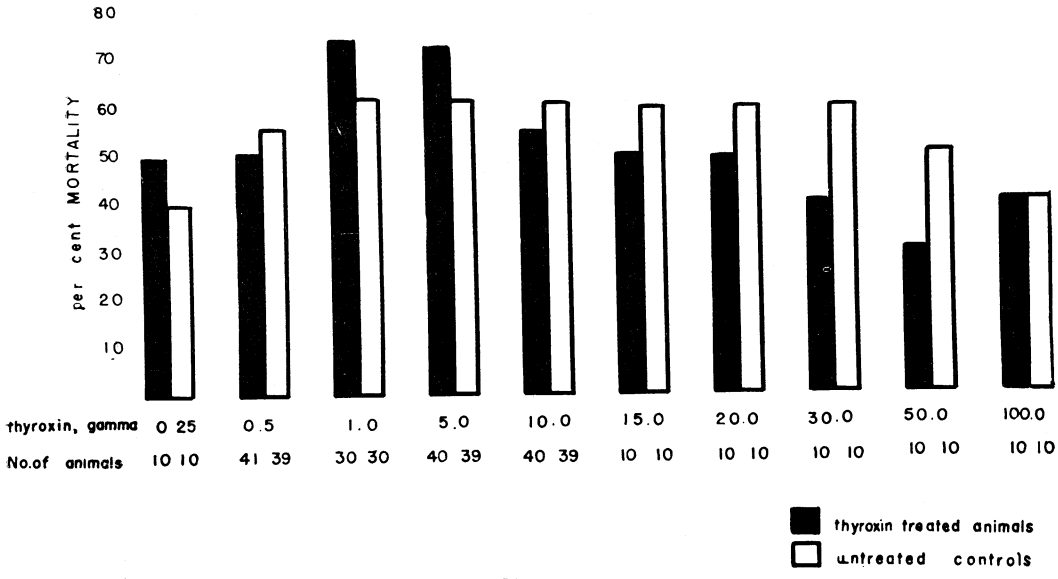

FIG. 1.
Effect of Various Doses of Thyroxin on Mouse Polioencephalitis.

experiments were of the AB strain and came from the colony of Dr. John Bittner, University of Minnesota. Their food consisted of Purina fox chow. The experiments were carried out during the months of March, June, and July.

Fifty mg of thyroxin crystals containing not less than 64% iodine were dissolved in 5 drops of N sodium hydroxide and diluted with distilled water to 50 cc. Injections of thyroxin were made subcutaneously four days before the inoculation with the virus so that the height of the thyroxin effect would coincide with the end of the incubation period.

The MM mouse virus was obtained from Dr. Raymond Bieter, University of Minnesota. 0.1 cc of a 10^{-6} dilution of the virus preparation was injected intraperitoneally without anesthesia. The same dilution was used throughout the experiments.

All animals which showed signs of paralysis and encephalitis or were found dead within the period of 24 hours to 2 weeks after the injection of the virus were considered to have succumbed to the disease.

The results in Fig. 1 show that no dose of thyroxin has been found which could protect the animals to a significant degree. Whenever differences in the susceptibility to the disease between the thyroxin-treated and untreated control animals seemed to occur, these differences were found insignificant when a larger number of animals were used.

TABLE I.
Mortality of Thyroxin-treated Animals and Untreated Controls.

	Thyroxin-treated animals	Non-treated controls
% mortality after one week	35.0	39.7
% mortality after 2 weeks	51.2	55.6
No. of animals	211	207

Table I summarizes the result of all experiments on thyroxin-treated and untreated control animals. No change in the length of the incubation period and no significant difference in the mortality between thyroxin-treated and untreated animals could be observed.

Summary. The susceptibility of young mice of the AB strain to polioencephalitis due to the MM virus could not be affected significantly by treatment with various doses of crystalline thyroxin.